

INTERNATIONAL SEARCH REPORT

Patent Application No

T/GB 00/01855

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 H01P1/161 H01P1/165

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 H01P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| X | WO 96 28857 A (CAMBRIDGE INDUSTRIES LIMITED) 19 September 1996 (1996-09-19) page 6, line 17 -page 9, line 2; figures 1,2 | 1,2,4,5, 7,10 |
| Y | | 3,11 |
| Y | PATENT ABSTRACTS OF JAPAN vol. 14, no. 175, 6 April 1990 (1990-04-06) -& JP 02 029001 A (NEC CORP), 31 January 1990 (1990-01-31) abstract | 3 |
| | -/- | |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

*** Special categories of cited documents :**

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

20 July 2000

Date of mailing of the international search report

26/07/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Den Otter, A

INTERNATIONAL SEARCH REPORT

International Application No

CT/GB 00/01855

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| Y | PATENT ABSTRACTS OF JAPAN vol. 1996, no. 4, 30 April 1996 (1996-04-30) -& JP 07 321502 A (FUJITSU GENERAL LTD), 8 December 1995 (1995-12-08) abstract; figures 1,3 ----- | 11 |
| A | EP 0 834 953 A (MATSUSHITA ELECTRIC IND. CO. LTD.) 8 April 1998 (1998-04-08) column 1, line 52 -column 2, line 44; figure 2 ----- | 1-3,7, 10,11 |

PCT INTERNATIONAL COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

MCCALLUM, William, Potter
Cruikshank & Fairweather
19 Royal Exchange Square
Glasgow G1 3AE
ROYAUME-UNI

| | |
|---|--|
| Date of mailing (day/month/year) 20 February 2001 (20.02.01) | IMPORTANT NOTIFICATION |
| Applicant's or agent's file reference RSN/P10676PC | |
| International application No. PCT/GB00/01855 | |
| | International filing date (day/month/year) 17 May 2000 (17.05.00) |

1. The following indications appeared on record concerning:

☒ the applicant
 ☐ the inventor
 ☐ the agent
 ☐ the common representative

Name and Address

 CAMBRIDGE INDUSTRIES LIMITED
 Cambridge House
 5 Commerce Park
 Brunel Road
 Theale
 Berkshire RG7 4AB
 United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person
 ☒ the name
 ☐ the address
 ☐ the nationality
 ☐ the residence

Name and Address

 CHANNEL MASTER LIMITED
 Cambridge House
 5 Commerce Park
 Brunel Road
 Theale
 Berkshire RG7 4AB
 United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

| | |
|---|---|
| <input checked="" type="checkbox"/> the receiving Office | <input type="checkbox"/> the designated Offices concerned |
| <input type="checkbox"/> the International Searching Authority | <input checked="" type="checkbox"/> the elected Offices concerned |
| <input checked="" type="checkbox"/> the International Preliminary Examining Authority | <input type="checkbox"/> other: |

 The International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

R. Raissi

Telephone No.: (41-22) 338.83.38

PCT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

| | |
|---|---|
| Date of mailing (day/month/year) 15 December 2000 (15.12.00) | |
| International application No. PCT/GB00/01855 | Applicant's or agent's file reference RSN/P10676PC |
| International filing date (day/month/year) 17 May 2000 (17.05.00) | Priority date (day/month/year) 17 May 1999 (17.05.99) |
| Applicant STOKES, Jamie | |

1. The designated Office is hereby notified of its election made:

☒

in the demand filed with the International Preliminary Examining Authority on:

15 November 2000 (15.11.00)

☐

in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was☐

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|--|--|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer Olivia TEFY Telephone No.: (41-22) 338.83.38 |
|--|--|

INTERNATIONAL SEARCH REPORT

International Application No

PCT/SE 97/02076

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H04B3/23 H04M9/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04B H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|---|-----------------------|
| A | EP 0 439 139 A (NEC CORPORATION) 31 July 1991 see abstract; figure 3 --- | 1-11 |
| A | PATENT ABSTRACTS OF JAPAN vol. 96, no. 2, 29 February 1996 & JP 07 288493 A (FUJITSU LTD), 31 October 1995, see abstract --- | 1-11 |
| A | PATENT ABSTRACTS OF JAPAN vol. 15, no. 394 (E-1119), 7 October 1991 & JP 03 159423 A (FUJITSU LTD), 9 July 1991, see abstract --- -/-- | 1-11 |



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"G" document member of the same patent family

Date of the actual completion of the international search

20 April 1998

Date of mailing of the international search report

28/04/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040. Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Montalbano, F

INTERNATIONAL SEARCH REPORT

International Application No

PCT/SE 97/02076

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|--|-----------------------|
| A | <p>T. GÄNSLER ET AL.: "A Double-Talk Detector Based on Coherence"</p> <p>IEEE TRANSACTION ON COMMUNICATIONS, vol. 44, no. 11, November 1996, pages 1421-1427, XP000674158</p> <p>cited in the application</p> <p>see the whole document</p> <p>-----</p> | 1-11 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/SE 97/02076

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---------------------|----------------------------|---------------------|
| EP 439139 A | 31-07-91 | JP 2518433 B | 24-07-96 |
| | | JP 3218150 A | 25-09-91 |
| | | AU 641208 B | 16-09-93 |
| | | AU 6995691 A | 25-07-91 |
| | | CA 2034802 C | 03-01-95 |
| | | DE 69122631 D | 21-11-96 |
| | | DE 69122631 T | 28-05-97 |
| | | US 5193112 A | 09-03-93 |
| ----- | | | |

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
23 November 2000 (23.11.2000)

PCT

(10) International Publication Number
WO 00/070704 A1

(51) International Patent Classification⁷: **H01P 1/161**,
1/165

(21) International Application Number: PCT/GB00/01855

(22) International Filing Date: 17 May 2000 (17.05.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
9911449.8 17 May 1999 (17.05.1999) GB

(71) Applicant (for all designated States except US): **CHAN-
NEL MASTER LIMITED** [GB/GB]; Cambridge House,
5 Commerce Park, Brunel Road, Theale, Berkshire RG7
4AB (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **STOKES, Jamie**

[GB/GB]; 166 Wantage Road, Reading, Berkshire RG30
2SJ (GB). **BAIRD, Andrew, Patrick** [GB/GB]; 23 Straw-
berry Fields, Bramley, Hampshire RG26 2QF (GB).

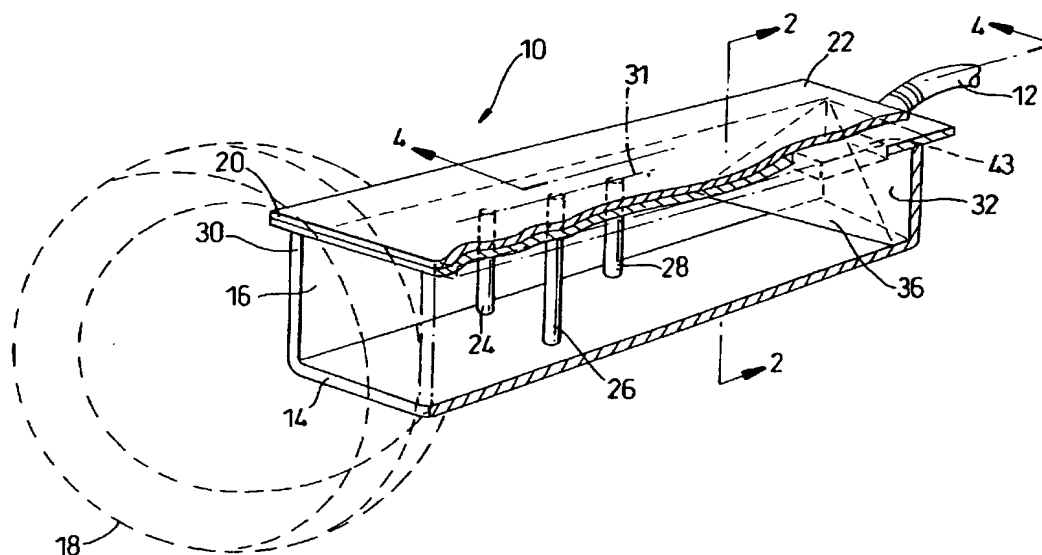
(74) Agents: **MCCALLUM, William, Potter** et al.; Cruik-
shank & Fairweather, 19 Royal Exchange Square, Glasgow
G1 3AE (GB).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE,
DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, GR, HU,
ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS,
LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ,
PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT,
TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent
(AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent
(AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,

[Continued on next page]

(54) Title: WAVEGUIDE POLARISATION ROTATOR



(57) Abstract: A waveguide rotator is described for use with an LNB for use with a dual polarisation waveguide probe system in which the waveguide has an internal structure which protrudes into the waveguide such that a first orthogonal component of the incident polarised signal propagates to the end of the waveguide and is reflected therefrom and the second orthogonally polarised component is cut-off by the protruding structure which narrows the waveguide, at a distance from a short circuit at the end of the waveguide, and is reflected substantially at the cut-off point. At some predetermined distance from the reflecting means and the cut-off point, the first component and the second component are recombined such that the polarisation of the recombined structure is rotated 90° from the incident polarisation.

WO 00/070704 A1

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

| | | | | | | | |
|----|--------------------------|----|--|----|--|----|--------------------------|
| AL | Albania | ES | Spain | LS | Lesotho | SI | Slovenia |
| AM | Armenia | FI | Finland | LT | Lithuania | SK | Slovakia |
| AT | Austria | FR | France | LU | Luxembourg | SN | Senegal |
| AU | Australia | GA | Gabon | LV | Latvia | SZ | Swaziland |
| AZ | Azerbaijan | GB | United Kingdom | MC | Monaco | TD | Chad |
| BA | Bosnia and Herzegovina | GE | Georgia | MD | Republic of Moldova | TG | Togo |
| BB | Barbados | GH | Ghana | MG | Madagascar | TJ | Tajikistan |
| BE | Belgium | GN | Guinea | MK | The former Yugoslav Republic of Macedonia | TM | Turkmenistan |
| BF | Burkina Faso | GR | Greece | ML | Mali | TR | Turkey |
| BG | Bulgaria | HU | Hungary | MN | Mongolia | TT | Trinidad and Tobago |
| BJ | Benin | IE | Ireland | MR | Mauritania | UA | Ukraine |
| BR | Brazil | IL | Israel | MW | Malawi | UG | Uganda |
| BY | Belarus | IS | Iceland | MX | Mexico | US | United States of America |
| CA | Canada | IT | Italy | NE | Niger | UZ | Uzbekistan |
| CF | Central African Republic | JP | Japan | NL | Netherlands | VN | Viet Nam |
| CG | Congo | KE | Kenya | NO | Norway | YU | Yugoslavia |
| CH | Switzerland | KG | Kyrgyzstan | NZ | New Zealand | ZW | Zimbabwe |
| CI | Côte d'Ivoire | KP | Democratic People's Republic of Korea | PL | Poland | | |
| CM | Cameroon | KR | Republic of Korea | PT | Portugal | | |
| CN | China | KZ | Kazakstan | RO | Romania | | |
| CU | Cuba | LC | Saint Lucia | RU | Russian Federation | | |
| CZ | Czech Republic | LI | Liechtenstein | SD | Sudan | | |
| DE | Germany | LK | Sri Lanka | SE | Sweden | | |
| DK | Denmark | LR | Liberia | SG | Singapore | | |
| EE | Estonia | | | | | | |

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below:
IPEA/

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:
The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

| | |
|---|---|
| For International Preliminary Examining Authority use only | |
| Identification of IPEA | Date of receipt of DEMAND |
| Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION | |
| International application No. PCT/GB00/01855 | Applicant's or agent's file reference RSN/SJB/P10676PC (Earliest) Priority date (day/month/year) 17th May 1999 |
| International filing date (day/month/year) 17th May 2000 | |
| Title of invention WAVEGUIDE ROTATOR SYSTEM | |
| Box No. II APPLICANT(S) | |
| Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) CAMBRIDGE INDUSTRIES LIMITED, CAMBRIDGE HOUSE, 5 COMMERCE PARK, BRUNEL ROAD, THEALE BERKSHIRE RG7 4AB UNITED KINGDOM | Telephone No.: Facsimile No.: Teleprinter No.: |
| State (that is, country) of nationality: UNITED KINGDOM (GB) | State (that is, country) of residence: UNITED KINGDOM (GB) |
| Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) STOKES, Jamie 166 WANTAGE ROAD READING BERKSHIRE RG30 2SJ United Kingdom | |
| State (that is, country) of nationality: UNITED KINGDOM (GB) | State (that is, country) of residence: UNITED KINGDOM (GB) |
| Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) BAIRD, Andrew Patrick, 23 STRAWBERRY FIELDS BRAMLEY HAMPSHIRE RG26 2QF United Kingdom | |
| State (that is, country) of nationality: UNITED KINGDOM (GB) | State (that is, country) of residence: UNITED KINGDOM (GB) |
| <input type="checkbox"/> Further applicants are indicated on a continuation sheet. | |

Sheet No. 2

International application No.
PCT/GB00/01855

Box No. III AGENT & COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The following person is ☒ agent ☐ common representative
 and ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.
☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.
☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.

Name and address: (Family name followed by given name; for a legal entity, full official designation.
 The address must include postal code and name of country.)

McCALLUM, William Potter; MacDOUGALL, Donald Carmichael; SECZKA, Jan
 Tymoteusz; NAISMITH, Robert Stewart; BORMER, Martin Granville; SHANKS,
 Andrew; NEWELL, Campbell; MORELAND, David; GODWIN, Edgar James; all of
 CRUIKSHANK & FAIRWEATHER, 15 ROYAL EXCHANGE SQUARE,
 GLASGOW G1 3AE, SCOTLAND, UNITED KINGDOM

Telephone No.:

0141 221 5767

Facsimile No.:

0141 221 7739

Teleprinter No.:

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION

Statement concerning amendments:*

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filed

the description

☐

as originally filed

☐

as amended under Article 34

the claims

☐

as originally filed

☐

as amended under Article 19 (together with any accompanying statement)

☐

as amended under Article 34

the drawings

☐

as originally filed

☐

as amended under Article 34

2. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). (This check-box may be marked only where the time limit under Article 19 has not yet expired.)

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination:

☐

which is the language in which the international application was filed.

☐

which is the language of a translation furnished for the purposes of international search.

☐

which is the language of publication of the international application.

☐

which is the language of the translation (to be) furnished for the purposes of international preliminary examination.

Box No. V ELECTION OF STATES

The applicant hereby elects all eligible States (that is, all States which have been designated and which are bound by Chapter II of the PCT)

excluding the following States which the applicant wishes not to elect:

Sheet No. 3.

International application No.
PCT/GB00/01855

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
| 3. copy (or, where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter | : | sheets |
| 6. other (specify) | : | sheets |

For International Preliminary Examining Authority use only

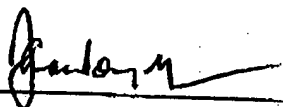
| received | not received |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |

The demand is also accompanied by the item(s) marked below:

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> fee calculation sheet | 4. <input type="checkbox"/> statement explaining lack of signature |
| 2. <input type="checkbox"/> separate signed power of attorney | 5. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form |
| 3. <input type="checkbox"/> copy of general power of attorney; reference number, if any: | 6. <input type="checkbox"/> other (specify): |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).



MR. D. C. MACDOUGALL
Cruikshank & Fairweather

15th November 2000

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

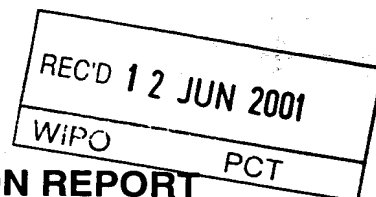
3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.☐ The applicant has been informed accordingly.4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



14



| | | |
|---|--|---|
| Applicant's or agent's file reference RSN/SJB/P10676PC | | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No. PCT/GB00/01855 | International filing date (day/month/year) 17/05/2000 | Priority date (day/month/year) 17/05/1999 |
| International Patent Classification (IPC) or national classification and IPC H01P1/161 | | |
| Applicant CHANNEL MASTER LIMITED | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
 - ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

| | |
|---|--|
| Date of submission of the demand 15/11/2000 | Date of completion of this report 08.06.2001 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized officer Kaleve, A Telephone No. +49 89 2399 2249  |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/01855

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-16 as originally filed

Claims, No.:

1-11 as originally filed

Drawings, No.:

1-19 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/01855

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|------|--------|--------------|
| Novelty (N) | Yes: | Claims | 3,6 |
| | No: | Claims | 1,2,4,5,7-11 |
| Inventive step (IS) | Yes: | Claims | |
| | No: | Claims | 1-11 |
| Industrial applicability (IA) | Yes: | Claims | 1-11 |
| | No: | Claims | |

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/01855

1. Reference is made to the following documents:

- D1: WO 96 28857 A (CAMBRIDGE INDUSTRIES LIMITED) 19 September 1996 (1996-09-19)
D2: PATENT ABSTRACTS OF JAPAN vol. 14, no. 175, 6 April 1990 (1990-04-06) -& JP 02 029001 A (NEC CORP), 31 January 1990 (1990-01-31)

Re Item V

2. Document D1 is regarded as being the prior art closest to the subject-matter of claim 1, and discloses all features set out in claim 1 (the references in parentheses applying to this document):
- a waveguide rotator 30 in a dual polarisation waveguide probe system for receiving at least two signals which are orthogonally polarised, said system having a waveguide 14 (see page 6 and 7; figure 1),
 - lines 4-20 of claim 1 of the application correspond almost literally to the first four paragraphs of claim 1 of D1,
 - said waveguide 14 having signal rotator means 30 disposed in said waveguide downstream of said second probe means 24 and having a protruding surface 34a extending from an interior surface of said waveguide partly across said waveguide towards a short circuit 32 disposed at an end of said waveguide (see page 6 and 7; figure 1),
 - said signal rotator means 30 being dimensioned and proportioned such that a first incident polarisation component V20 of said second polarisation signal propagates to the short circuit at the end of the waveguide and is reflected therefrom (see page 8, lines 20-21 and figure 2)
 - and a second incident polarisation component Vpra is cut-off by said protruding surface 34a,b before reaching the short circuit, and is reflected substantially by said protruding surface 34a,b at a frequency dependent cut-off point 34a,b (see page 8, lines 23-28: depending on the frequency the first 34a or the second step 34b corresponds to $\lambda/4$)
 - whereby said reflected first and second components recombine within said waveguide such that the polarisation of the reflected signal is rotated by 90° from the incident polarisation such that the reflected polarised signal is in said

longitudinal plane for detection by said second probe means 24 (see page 8, lines 30-34; figures 1 and 2).

Therefore the subject-matter of claim 1 is not new contrary to the requirement of Article 33(2) PCT.

3. The subject-matter of claim 11 is not new as well, since its additional features compared to claim 1 are disclosed in D1:
 - a low-noise block (page 6 , line 18),
 - a feed horn 18 (see page 6, line 22),
 - a printed circuit board 10, from which the cable 12 is led (see page 6, line 24), and an associated printed circuit support are (partly implicitly) disclosed (see also figure 1).
4. Claim 10 when compared with claim 1 merely brings in the additional feature 'increasing the wavelength of a second component of said polarised signal by decreasing the width of said waveguide by said protrusion'. In D1 the width of the waveguide is also decreased by the protrusion 30 (more than bisected). Consequently, the same effect as described in the present application, namely an increase of the wavelength of the second component, must also be present in D1. Therefore, the subject-matter of claim 10, too, is not new.
5. Dependent claims 2-9 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty or inventive step, the reasons being as follows:
 - The subject-matter of claims 2, 4, 5, 7-9 is not new, since it is disclosed in D1.
 - The subject-matter of claims 3 and 6 does not involve an inventive step, since their additional features are trivial having regard to D1 and D2.

Re Item VII

6. The independent claims are not in the two-part form as required by Rule 6.3(b) PCT.

7. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

Re Item VIII

8. 'For use' in claim 1 implies that the dual polarisation waveguide probe system is not part of the waveguide rotator and that the items specified in lines 2 to 20 of the claim are in fact outside the scope thereof. In this respect claim 1 does not comply with the prescriptions as to conciseness and clarity of Article 6 PCT.
- For the following reasons, too, claim 1 is not clear:
- The definition of the longitudinal plane (line 10) is unclear, since a plane cannot be defined by a probe, which is merely a line.
- In line 15 reference is made to 'said probe means', whereas the claim does not contain any corresponding antecedent.
- In lines 18- 20 it is said 'second probe means ... extending ... in said longitudinal plane'. Thereby, it is unclear, whether the second probe means intersects said longitudinal plane in a certain angle or it is lying in the longitudinal plane.
- The word 'and' in line 31 renders the claim unclear, since it does not make sense in this context.
- In line 31 allusion is made to the fact that a second polarisation component is 'cut-off' by a protruding surface. This seems to make no technical sense in the context of claim 1.
- In line 34 reference is made to 'said first component', whereas the claim does not contain any corresponding antecedent.
9. In claim 2 'a wedge-shaped protrusion' is defined. As a result, it is not clear, whether 'the protruding surface' of claim 1 is the surface of this 'wedge-shaped protrusion' or a second protrusion is added.
10. In claims 5 to 7, reference is made to 'the wedge' or 'the wedge shaped protrusion', whereas claim 1 does not contain any corresponding antecedent.
11. In claim 10, line 18, reference is made to 'the incident signal', whereas the claim does not contain any corresponding antecedent.

International application No. PCT/GB00/01855

On page 20, line 5, reference is made to 'the incident signal', whereas the claim does not contain any corresponding antecedent.

TENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|--|---|--|
| Applicant's or agent's file reference RSN/P10676PC | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/GB 00/ 01855 | International filing date (day/month/year) 17/05/2000 | (Earliest) Priority Date (day/month/year) 17/05/1999 |
| Applicant CAMBRIDGE INDUSTRIES LIMITED | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

WAVEGUIDE POLARISATION ROTATOR.

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

1



None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 00/ 01855

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

PLEASE DELETE FROM THE WORD "THE " ON LINE15 TO THE END
WHICH ARE THE WORDS "INVENTION ARE DESCRIBED" ON LINE 24

INTERNATIONAL SEARCH REPORT

International Application No

GB 00/01855

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01P1/161 H01P1/165

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | WO 96 28857 A (CAMBRIDGE INDUSTRIES LIMITED) 19 September 1996 (1996-09-19) page 6, line 17 -page 9, line 2; figures 1,2 | 1,2,4,5, 7,10 |
| Y | --- | 3,11 |
| Y | PATENT ABSTRACTS OF JAPAN vol. 14, no. 175, 6 April 1990 (1990-04-06) -& JP 02 029001 A (NEC CORP), 31 January 1990 (1990-01-31) abstract --- -/-- | 3 |



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

20 July 2000

Date of mailing of the international search report

26/07/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Den Otter, A

INTERNATIONAL SEARCH REPORT

International Application No

GB 00/01855

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| Y | PATENT ABSTRACTS OF JAPAN vol. 1996, no. 4, 30 April 1996 (1996-04-30) -& JP 07 321502 A (FUJITSU GENERAL LTD), 8 December 1995 (1995-12-08) abstract; figures 1,3 --- | 11 |
| A | EP 0 834 953 A (MATSUSHITA ELECTRIC IND. CO. LTD.) 8 April 1998 (1998-04-08) column 1, line 52 -column 2, line 44; figure 2 ----- | 1-3,7, 10,11 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

GB 00/01855

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---------------------|---|--|
| WO 9628857 A | 19-09-1996 | AT 180361 T AU 4671096 A DE 69602526 D DE 69602526 T EP 0815611 A ES 2131391 T US 5977844 A | 15-06-1999 02-10-1996 24-06-1999 20-01-2000 07-01-1998 16-07-1999 02-11-1999 |
| JP 02029001 A | 31-01-1990 | NONE | |
| JP 07321502 A | 08-12-1995 | NONE | |
| EP 0834953 A | 08-04-1998 | JP 8288704 A US 5760660 A | 01-11-1996 02-06-1998 |